STATEMENT OF BASIS

Title V Air Quality Operating Permit Renewal

NuStar Pipe Line Operating Partnership, L.P.
Yankton, South Dakota

South Dakota Department of Environment and Natural Resources

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1.0 BACKGROUND

On March 9, 1998, Kaneb Pipe Line Operating Partnership, LP (Kaneb) was issued Title V air quality operating permit #28.9903-08 for its bulk petroleum marketing terminal in Yankton, South Dakota. On May 29, 2001, the permit was revised to include two storage tanks used to store denatured ethanol. In July 2001, Kaneb's permit was again revised by adding a third storage tank (Tank 01-43) capable of storing denatured ethanol.

On July 1, 2005, Kaneb notified the Department their new parent company would be Valero Logistics Operation, L.P (Valero). On March 26, 2008, Valero notified the Department they were changing their name to NuStar Pipeline Operating Partnership, LP (NuStar). The name change was effective on March 31, 2008.

NuStar is a refined petroleum pipeline terminal. The facility handles refined petroleum products including propane, unleaded regular gasoline, unleaded premium gasoline, #2 fuel oil, #1 fuel oil, diesel and interface. The terminal receives the petroleum liquids through a pipeline network. The Primary Standard Industrial Classification (SIC) Code is 4613.

There have been no complaints or violations filed against this facility since the last permit review.

1.1 Operational Equipment

Table 1-1 provides a description of the existing equipment at NuStar's facility in Yankton from the Title V air quality operating permit issued June 18, 2010.

Table 1-1 – Description of Permitted Units, Operations, and Processes

Unit	Description	Maximum Capacity	Control Equipment
#1	Custom built, two-bay, top-fill, petroleum fuels and ethanol, transport truck, loading rack with 16 arms	Not applicable	Not applicable
#2	Tank 02-05 – 1959 GATX above ground, internal floating roof storage tank	76,188 gallon	Not applicable
#3	Tank 05-09 - 1959 GATX above ground, fixed roof storage tank	181,734 gallon	Not applicable
#4	Tank 05-10 -1959 GATX above ground, fixed roof storage tank	181,734 gallon	Not applicable
#5	Tank 05-11 - 1959 GATX above ground, internal floating roof storage tank	181,734 gallon	Not applicable
#6	Tank 05-12 - 1959 GATX above ground, internal floating roof storage tank	181,734 gallon	Not applicable
#7	Tank 10-09 - 1959 GATX above ground, fixed roof storage tank	389,844 gallon	Not applicable
#8	Tank 10-10 - 1959 GATX above ground, fixed roof storage tank	389,844 gallon	Not applicable

Unit	Description	Maximum Capacity	Control Equipment
#9	Tank 10-11 - 1959 GATX above ground, fixed roof storage tank	389,844 gallon	Not applicable
#10	Tank 10-12 - 1959 GATX above ground, fixed roof storage tank	389,844 gallon	Not applicable
#11	Tank 10-17 - 1963 GATX above ground, fixed roof storage tank	389,180 gallon	Not applicable
#12	Tank 15-02 - 1959 GATX above ground, internal floating roof storage tank	614,082 gallon	Not applicable
#13	Tank 15-03 - 1959 GATX above ground, internal floating roof storage tank	614,082 gallon	Not applicable
#14	Tank 20-01 - 1959 GATX above ground, fixed roof storage tank	796,656 gallon	Not applicable
#15	Tank 20-02 - 1964 GATX above ground, fixed roof storage tank	797,790 gallon	Not applicable
#16	Tank 30-14 – 1964 above ground, internal floating roof storage tank	1,227,996 gallon	Not applicable
#17	Tank 50-01 – 1963 above ground, internal floating roof storage tank	2,048,592 gallon	Not applicable

Existing insignificant activities identified in the application as having the potential to emit less than 2 tons per year are listed as follows:

1. Horizontal tanks for storage of additives;
2. Equipment fugitives from valves, fittings, pump seal, etc.; and
3. Other insignificant activities including oil/water separator, facility maintenance activities, etc.

1.2 Requested Action

On November 7, 2011, the Department received an application to renew NuStar's Title V air quality operating permit. NuStar requested the following modifications to its permit:

1. Revising the hazardous air pollutant (HAP) screening equation found in 40 CFR 63 Subpart R as follows:
   a. TF, the term defining the number of fixed roof tanks in gasoline service needs to be changed from 1 to 0;
   b. The Q term in the screening equation, defining the daily throughput of gasoline, would be increased from 946,350 liters per day to 1,192,275 liters per day; and,
   c. The OE term (total HAP from other sources will increase from 0.739 to 0.840 because of updated emission calculations.
   d. ET, the major source applicability factor will increase from 0.739 to 0.967.

The Department will review these proposed revisions and make the appropriate changes in the permit.

2.0 New Source Performance Standards

The Department reviewed the New Source Performance Standards listed in 40 CFR Part 60 to determine if any of the federal New Source Performance Standards are applicable to this facility. The following may be applicable:

2.1 Standards Applicable to Storage Tanks

There are three New Source Performance Standards for storage vessels. The three standards are applicable to the following storage vessels:

1. 40 CFR Part 60, Subpart K: applicable to storage vessels for petroleum liquids capable of storing greater than 40,000 gallons and commenced construction after June 11, 1973 but prior to May 19, 1978;
2. 40 CFR Part 60, Subpart Ka: applicable to storage vessels for petroleum liquids capable of storing greater than 40,000 gallons and commenced construction after May 18, 1978; and
3. 40 CFR Part 60, Subpart Kb: applicable to storage vessels for volatile organic liquids capable of storing 75 cubic meters (approximately 19,813 gallons) or greater and commenced construction after July 23, 1984.

NuStar's tanks were all constructed prior to the applicable dates specified above and are not applicable to Subpart K, Ka, or Kb.

2.2 ARSD 74:36:07:23 – 40 CFR Part 60, Subpart XX

The Department reviewed the Standards of Performance for Bulk Gasoline Terminals to determine if it is applicable to NuStar's operation. Subpart XX is applicable if:

1. The provisions of this subpart are applicable to the total of all the loading racks at a bulk gasoline terminal which deliver liquid product into gasoline tank trucks; and
2. The construction or modification of the loading rack commences after December 17, 1980.

NuStar's bulk truck loading terminal was originally constructed in 1959. In, 2010, the existing loading rack was modified from a top loading rack to a bottom loading

As noted in the 2010 review of the change in the loading rack, the bottom loading rack configuration is not considered new construction because the loading rack was originally constructed prior to December 17, 1980.

As outlined in 40 CFR § 60.14(a), a modification is any physical change or operational change that results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies. As noted in the 2010 review, switching from a top loading to a bottom loading rack will decrease the hourly emission rate to the atmosphere. Therefore, the bottom loading rack configuration was not considered a modification.

As outlined in 40 CFR 60.15(b), reconstruction is the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility. As noted in the 2010 review, the cost of switching from a top loading to a bottom loading rack would be approximately 33% of a comparable loading rack. Therefore, the bottom loading rack configuration was not considered reconstruction.

NuStar is not subject to Subpart XX.

2.3 Other Applicable New Source Performance Standards

The Department reviewed the other New Source Performance Standards and determined there are no other standards applicable to NuStar.

3.0 New Source Review

The Administrative Rules of South Dakota (ARSD) 74:36:10:01 notes that new source review regulations apply to areas of the state which are designated as nonattainment pursuant to the Clean Air Act for any pollutant regulated under the Clean Air Act. NuStar's operations are located near Yankton, South Dakota, which is in attainment or unclassifiable for all the pollutants regulated under the Clean Air Act. Therefore, NuStar is not subject to new source review.

4.0 Prevention of Significant Deterioration

A prevention of significant deterioration (PSD) review applies to new major stationary sources and major modifications to existing major stationary sources in areas designated as attainment under Section 107 of the Clean Air Act for any regulated air pollutant. The following is a list of regulated air pollutants under the PSD program:

1. Total suspended particulate (PM);
2. Particulate with a diameter less than or equal to 10 microns (PM10);
3. Particulate with a diameter less than or equal to 2.5 microns (PM2.5);
4. Sulfur dioxide (SO_2);
5. Nitrogen oxides (NOx);
6. Carbon monoxide (CO);
7. Ozone – measured as volatile organic compounds (VOCs);
8. Lead;
9. Fluorides
10. Sulfuric acid mist;

11. Hydrogen sulfide;
12. Reduced sulfur compounds;
13. Total reduced sulfur; and
14. Greenhouse gases (carbon dioxide, methane, nitrous oxide, etc.).

If the source is considered one of the 28 named PSD source categories listed in Section 169 of the federal Clean Air Act, the major source threshold is 100 tons per year of any regulated air pollutant, except for greenhouse gases. The major source threshold for all other sources is 250 tons per year of any regulated air pollutant, except for greenhouse gases.

One of the 28 source categories listed is "petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels." Under the PSD program petroleum refers to unrefined crude oils. The facility stores only refined petroleum fuels, and less than 300,000 barrels; therefore, the PSD threshold for this facility is 250 tons per year.

According to the Clean Air Act, once a pollutant is regulated under any part of the Act, (as was the case with greenhouse gas emissions after the motor vehicle regulations were finalized in March 2010) major new sources or major modifications are subject to the PSD program and Title V air quality operating permit program. Under the Clean Air Act, PSD and Title V air quality operating permits are required for all sources that emit a regulated air pollutant above 100 or 250 tons per year, depending on the source. This threshold, if applied to greenhouse gases, would greatly increase the number of facilities requiring a PSD review or Title V air quality operating permit. Based on administrative necessity, EPA increased these thresholds through the "Tailoring Rule."

On May 13, 2010, EPA issued the final version of the "Tailoring Rule" for greenhouse gas emissions. The major source threshold for greenhouse gases is listed below:

1. New PSD source because of a criteria air pollutant, the major source threshold for greenhouse gases is 75,000 tons per year of carbon dioxide equivalent or more;
2. New PSD source if greenhouse gas emissions are 100,000 tons per year of carbon dioxide equivalent or more;
3. For an existing PSD source because of a criteria air pollutant, a major modification for greenhouse gases is an increase of 75,000 tons per year of carbon dioxide equivalent or more;
4. For an existing non-PSD source that has the potential to emit 100,000 tons per year of carbon dioxide equivalent emissions or more, a major modification for greenhouse gases is an increase of 75,000 tons per year of carbon dioxide equivalent or more; and
5. In addition to subsection (2) and (4), a specific greenhouse gas, without calculating the carbon dioxide equivalent, also needs to emit greater than 100 or 250 tons per year, whichever is applicable, to be regulated.

4.1 Emission Factors

The Department uses stack test results to determine air emissions whenever stack test data is available from the source or a similar source. When stack test results are not available, The

Department relies on manufacturing data, material balance, EPA's Compilation of Air Pollutant Emission Factors (AP-42, Fifth Edition, Volume 1) document, the applicant's application, or other methods to determine potential air emissions.

Potential uncontrolled emissions for each applicable pollutant are calculated from the maximum design capacity listed in the application and assuming the unit operates every hour of every day of the year. Potential uncontrolled emissions are not realistic of the actual emissions and are used only to identify which air quality permit and the requirements NuStar must meet.

4.2 Potential Emissions from Loading Rack

Loading rack emissions occur primarily as a result of the loading of transport tanks with gasoline. The dry tanks contain vapor from the previous load. As the tank fills, these vapors are displaced and vented to the vapor collection unit. Because of the low volatility of distillate oils, negligible amounts of vapor remain in transport tanks previously filled with these products.

Volatile organic compound emissions from the loading rack are estimated based on the gasoline throughput and a loading loss emission factor calculated using Equation 4-1, which is derived from AP-42, 5.2-4, June 2008.

Equation 4-1 – Loading Loss

Where:

- L_L = loading loss, in pounds per 1,000 gallons of liquid loaded;
- S = saturation factor;
- P = true vapor pressure of liquid loaded, in pounds per square inch absolute;
- M = molecular weight of vapors, in pounds per pound-mole; and
- T = temperature of liquid loaded, in Rankin degrees.

Throughput data for the loading rack was provided in the 2011 renewal application. The maximum NuStar is capable of processing through the loading rack is limited by the throughput limit of 7,500 barrels per day or 114,975,000 gallons per year which NuStar accepted to avoid the requirements in 40 CFR Part 63, Subpart R. Since it appears NuStar can process 100% of the throughput limit as gasoline which results in the greatest volatile organic compound emissions, the potential to emit from the loading rack will be based on gasoline only. The parameters for Equation 4-1 for distillate oil and denatured ethanol are listed for informational purposes. This data is summarized in Table 4-1 and used in Equation 4-1 to calculate emissions.

Table 4-1 – Potential Uncontrolled Loading Rack Emissions [1]

Description	Gasoline	Distillate	Denatured Ethanol
Modeled Throughput (gallons per year)	114,975,000		
S (submerged loading: dedicated normal service)	0.6	0.6	0.6
P (pounds per square inch absolute)	4.63	0.0082	0.524
M (pounds per pound mole)	63.33	130	51.14

T (Rankin)	507.2	507.2	507.2
L_L (pounds per 1,000 gallons loaded)	4.32	0.015	0.39
VOC emissions (tons per year)	248		

[1] – Vapor pressure and molecular weight data taken from application.

4.3 Storage Tanks

The storage tank emissions were calculated by the applicant using the Environmental Protection Agency's Tanks 4.09 program and are included in the application. The tank emission results are summarized in Table 4-2.

Table 4-2 – Storage Tank VOC Emissions

Unit	Tank	VOCs (tons per year)
#2	2-5	1.67
#3	5-9	0.33
#4	5-10	0.33
#5	5-11	1.53
#6	5-12	1.53
#7	10-9	0.43
#8	10-10	0.43
#9	10-11	0.43
#10	10-12	0.38
#11	10-17	0.43
#12	15-2	1.75
#13	15-3	1.75
#14	20-1	0.62
#15	20-2	0.67
#16	30-14	2.53
#17	50-1	3.69
	Total	**18.50**

4.4 Potential Emission Summary

The potential emissions for the tanks and loading rack are summarized in Table 4-3.

Table 4-3 – Potential Emissions (tons/year)

Unit	TSP/PM10/PM2.5	SO_2	NOx	CO	VOCs	CO_2e
#1	0.0	0.0	0.0	0.0	248	0.0
Storage Tanks	0.0	0.0	0.0	0.0	18.5	0.0
Total	0	0	0	0	267	0

NuStar's potential emissions for regulated air pollutants are greater than the major source threshold for the PSD program; however, NuStar constructed this facility prior to the promulgation of the PSD program. Therefore, NuStar is grandfathered-in under the PSD program. However, any modification that occurs at this facility must be reviewed to determine if it is considered a major modification and subject to a PSD review.

5.0 National Emission Standards for Hazardous Air Pollutants

The Department reviewed 40 CFR Part 61 to determine the applicability to this facility to any of the subparts and determined there were no applicable subparts.

6.0 Maximum Achievable Control Technology Standards

The federal Maximum Control Technology Standards are applicable to both major and area sources of hazardous air pollutants. A major source of a hazardous air pollutants is a facility that has the potential to emit greater than 10 tons of a single hazardous air pollutant or 25 tons of any combination of a hazardous air pollutants. An area source is a source that is not a major source of hazardous air pollutants.

6.1 Potential HAP Emissions

The Department used the baseline values for gasoline vapor phase HAP-VOC weight percentages listed in Table 11.3-2 of the EPA's January 2001 document *Gasoline Marketing (Stage I and Stage II),* which are displayed in Table 6-1.

Table 6-1: Gasoline Vapor Phase HAP-VOC Weight Percentages

HAP Component	Percentage of total VOC emissions
Benzene	0.9 %
Ethyl Benzene	0.1 %
Toluene	1.3 %
Xylene	0.5 %
2,2,4-Trimethylpentane	0.8 %
Hexane	1.6 %
Cumene	0.05 %
Total =	**5.25 %**

Based on the HAP-VOC percentages above, hexane will be the single hazardous air pollutant emitted in the greatest amount. Table 6-2 identifies the potential hazardous air pollutant emissions from the loading rack considering the vapor combustion unit. Again, gasoline will create the greatest amount of hazardous air pollutant emissions from the loading rack.

Table 6-2 – Potential Loading Rack Emissions

	Gasoline
VOC emissions (tons per year)	248

HAP percentage	5.25%
Hexane percentage	1.6%
HAP total (tons per year)	13.0
Hexane Total (tons per year)	4.0

The storage tank emissions were calculated by the applicant using the Environmental Protection Agency's Tanks 4.09 program and are included in the application. The tank emission results are summarized in Table 6-3.

Table 6-3 – Potential HAP Emissions from Tanks

Unit	Tank	HAPs (tons per year)	Hexane (tons per year)
#2	2-5	0.09	0.03
#3	5-9	0.02	0.005
#4	5-10	0.02	0.005
#5	5-11	0.08	0.02
#6	5-12	0.08	0.02
#7	10-9	0.02	0.007
#8	10-10	0.02	0.007
#9	10-11	0.02	0.007
#10	10-12	0.02	0.006
#11	10-17	0.02	0.007
#12	15-2	0.09	0.03
#13	15-3	0.09	0.03
#14	20-1	0.03	0.01
#15	20-2	0.03	0.01
#16	30-14	0.13	0.04
#17	50-1	0.2	0.06
	Total	**0.97**	**0.3**

The potential hazardous air pollutant emissions for the loading rack and storage tanks are summarized in Table 6-4.

Table 6-4: Potential Uncontrolled HAP Emissions

Source	Total HAPs	Hexane
Loading Rack	13 tons/year	4.0 tons/year
Storage Tanks	1.0 tons/year	0.3 tons/year
Total =	**14 tons/year**	**4 tons/year**

Table 6-4 demonstrates NuStar is considered an area source of hazardous air pollutants. The Department reviewed the Maximum Achievable Control Technology Standards under 40 CFR Part 63 and determined the following may be applicable to NuStar.

6.2 ARSD 74:36:08:12 - 40 CFR 63, Subpart R

In accordance with ARSD 74:36:08:12, as referenced to 40 CFR § 63.420(a), the affected source to which this subpart applies is each bulk gasoline terminal, except those bulk gasoline terminals that result in an E_T value less than 1 and the facility applies with 40 CFR § 63.420(c), (d), (e), and (f). E_T is based on Equation 6.1 and is derived from 40 CFR § 63.420(a)(1).

Equation 6-1 – Area Source Equation for Gasoline Distribution Facilities

$$E_T = CF\ 0.59\ T_F\ \ 1 - CE\ \ + 0.17\ T_E\ \ + 0.08\ T_{ES}\ \ + 0.038\ T_I\ \ + 8.5 \times 10^{-6}\ C\ \ + KQ\ \ + 0.04(OE)$$

Where:

- E_T = Emissions screening factor for bulk gasoline terminals;
- CF = 0.161 for bulk gasoline terminals that do not handle any reformulated or oxygenated gasoline containing 7.6 percent by volume or greater methyl tert-butyl ether or 1.0 if handling reformulated or oxygenated gasoline containing 7.6 percent by volume or greater methyl tert-butyl ether;
- T_F = Total number of fixed roof gasoline storage tanks without an internal floating roof;
- CE = Control efficiency of the vapor processing system on the storage vessels;
- T_E = Total number of external floating roof gasoline storage tanks with only primary seals;
- T_{ES} = Total number of external floating roof gasoline storage tanks with primary and secondary seals;
- T_I = Total number of fixed roof gasoline storage tanks with an internal floating roof;
- C = The number of pumps, valves, connectors, load arm valves, and open ended lines in gasoline service;
- K = 4.52E-6 for bulk gasoline terminals with uncontrolled loading racks (no vapor collection and processing system) or 4.5E10-9 for bulk gasoline terminals with controlled loading racks (loading racks that have vapor collection and processing system installed on the emission stream);
- Q = Gasoline throughput limit, in liters per day; and
- OE = Total HAP from other emission sources not specified by the other parameters (miscellaneous sources).

NuStar requested changes in the application to the screening equation (Equation 6-1) for the following:

1. Change T_F from 1 to 0 to reflect the number of fixed roof tanks;
2. Change OE from 0.739 to 0.840; and
3. Change Q from 946,350 to 1,192,275 liters per day.

Table 6-5 displays the values for Equation 6-1.

Table 6-5 – Values for the Area Source Equation

Terminal	CF	T_F	CE	T_E	T_{ES}	T_I	C	K	Q	OE
Yankton	0.161	0	0	0	0	7	16,500	4.52E-06	1,192,275	0.840

Based on Equation 6-1 and using the parameters in Table 6-5, E_T equates to value of 0.938 and is less than 1.0. Therefore, NuStar is considered an area source and this MACT standard is not applicable.

6.3 74:36:08:12 – 40 CFR 63, Subpart BBBBBB

Subpart BBBBBB applies to each area source gasoline distribution bulk terminals, bulk plants, and pipeline facilities. NuStar's facility in Yankton is considered a bulk gasoline terminal because its gasoline throughput is 20,000 gallons per day or greater. NuStar is subject to the requirements of Subpart BBBBBB because it is a bulk gasoline terminal that is not subject to 40 CFR Part 63, Subpart R or CC.

Based on NuStar's gasoline throughput limit for Subpart R, NuStar's bulk gasoline terminal is capable of loading 250,000 gallons or more of gasoline per day. NuStar submitted its initial notification for Subpart BBBBBB on December 27, 2010, and indicated it was in compliance with the Subpart BBBBBB. On January 25, 2012, NuStar submitted a semiannual report and Notification of Compliance in one report. NuStar indicated it was in compliance with Subpart BBBBBB.

NuStar commenced construction of the Yankton facility prior to November 9, 2006 and has not modified any of the operations that would be considered reconstruction as defined in 40 CFR § 63.2. Therefore, NuStar's Yankton facility is considered an existing affected source and must comply with the standards in this subpart no later than January 10, 2011.

6.4 Other MACT Standards

The Department reviewed the other Maximum Achievable Control Technology Standards and determined there are no other standards applicable to NuStar.

7.0 State Requirements

7.1 State Particulate and Sulfur Dioxide Emission Limits

The permitted units do not emit particulate or sulfur dioxide emissions and these requirements are not applicable.

7.2 Compliance Assurance Monitoring

Compliance assurance monitoring is applicable to permit applications received on or after April 20, 1998, from major sources applying for a Title V air quality operating permit. NuStar's

application was received after April 20, 1998. Therefore, compliance assurance monitoring is applicable to any unit that meets the following criteria:

1. The unit is subject to an emission limit or standard for the applicable regulated air pollutant;
2. The unit uses a control device to achieve compliance with any such emission limit or standard; and
3. The unit has potential uncontrolled emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source.

In accordance with 40 CFR § 64.2(b)(1)(i), if the applicable standard was proposed by EPA after November 15, 1990 pursuant to section 111 or 112 of the Act, the unit is exempt from compliance assurance monitoring. The federal standard Subpart BBBBBB was promulgated after November 15, 1990. Therefore, compliance assurance monitoring is not applicable because the monitoring, recordkeeping and reporting requirements are sufficient in the federal standard to ensure compliance.

NuStar does not meet all three requirements for compliance assurance monitoring.

7.3 Periodic Monitoring

Periodic monitoring is required for each emission unit that is subject to an applicable requirement at a source subject to Title V of the federal Clean Air Act. NuStar is required to meet opacity emission limits. Opacity from the storage tanks and loading rack are negligible. Periodic monitoring for the tanks shall consist of the recordkeeping and reporting requirements in the New Source Performance Standards and Maximum Achievable Control Technology Standards that are applicable to NuStar.

8.0 RECOMMENDATION

Based on the above findings, NuStar is classified as a major source under the Title V air quality operating permit program. A major source is one that has the potential to emit over 100 tons per year of a regulated air pollutant. NuStar will be required to operate within the requirements stipulated in the following regulations:

- ARSD 74:36:05 – Operating Permits for Part 70 Sources;
- ARSD 74:36:08 – Maximum Achievable Control Technology Standards;
- ARSD 74:36:12 – Control of Visible Emissions;
- ARSD 74:37:01 – Air Emission Fees.

Based on information the Department received in the permit application, NuStar's Title V air quality operating permit may be renewed. Any questions on this review should be directed to Keith Gestring, Engineer II, with the Department of Environment and Natural Resources.